Table S1. Full calculation procedures for center of pressure (CoP) variables

The following calculation methods were adopted from Vieira et al. [1]:

Variable	Description
Sway path	"The length of CoP trajectory on the Base of Support (BoS)." As the CoP signal does not directly indicate changes in postural control, the sway path can be computed by summing the distance between successive CoP locations [2].
Mean velocity	"The total distance travelled by the CoP over time." It can be determined by dividing the sway path by the duration of the trial, and it demonstrates high reliability when a double-legged stance is employed (R = 0.84) [3].
Sway area or 95% confidence ellipse area	"The dispersion of the CP data through the calculus of the statokinesigram area" [4]. It was calculated by computing 95% confidence ellipse of COP AP and COP ML coordinates. In other terms, it includes 95% of the CoP samples within 60 seconds. The sway area was computed using principal component analysis to estimate its axes [5,6].

In this study, the COP signals were processed on a computer linked to the ADC, utilizing BioWare® software to acquire the COP traces. Throughout the trials, the COP position traces were recorded using a static force platform (Kistler®). A single force platform, with dimensions of 60 cm × 90 cm (42 cm × 70 cm between sensors), was used to collect all COP data during bipedal quiet standing. The data were sampled and recorded at a frequency of 100 Hz.

Raw COP data were processed using an automated code written in MATLAB (MATLAB, version R2019b, Usway area). The MATLAB scripts for calculating these parameters are provided in Table and were adapted from Prieto *et al*. [7] and Březina [8]. An increase in COP parameters indicates inadequate postural control, while a decrease signals better postural control. The variables analysed were sway area, mean velocity, and sway path in the AP and ML directions. All parameters were computed for each trial and then averaged.

MATLAB codes for COP parameters:

CoP Parameter	MATLAB Code
Sway path	sway path=sum(sqrt(CPap.^2+CPml.^2)).
Mean velocity	mean velocity=sum(sqrt(diff(CPap).^2+diff(CPml).^2))∗freq/length(CPap).
Sway area or 95% confidence ellipse area	[vec,val]=eig(cov(CPap,CPml)); Area=pi∗prod(2.4478∗sqrt(svd(val))).

These parameters were selected because they are widely recognized as representative measures [9] and exhibit strong correlations with falls in older adults and are highly correlated with falls in older adults [10-13]. They also demonstrate high interrater and test-retest reliability, with ICC values ranging from 0.70 to 0.89 [14]. Mean velocity was utilized in this study as it has been shown to be the most discriminative COP parameter

for evaluating age group differences in postural control and fall risk [15,16]. Sway area was selected because prior research has demonstrated that combining mean velocity and sway area provides discriminative data between individuals with impaired postural control and those without impairments, whereas using sway area alone does not offer this level of differentiation [17].

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